

## Title (en)

Method for making binary and ternary metal chalcogenide materials

## Title (de)

Verfahren zur Herstellung von Binär- und Ternär-Metallchalcogenidmaterialien

## Title (fr)

Procédé de fabrication de matériaux à base de chalcogénures métalliques binaires

## Publication

**EP 2130942 A2 20091209 (EN)**

## Application

**EP 09159766 A 20090508**

## Priority

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- US 42582109 A 20090417

## Abstract (en)

This invention discloses the synthesis of metal chalcogenides using chemical vapor deposition (CVD) process, atomic layer deposition (ALD) process, or wet solution process. Ligand exchange reactions of organosilyltellurium or organosilylselenium with a series of metal compounds having nucleophilic substituents generate metal chalcogenides. This chemistry is used to deposit germanium-antimony-tellurium (GeSbTe) and germanium-antimony-selenium (GeSbSe) films or other tellurium and selenium based metal compounds for phase change memory and photovoltaic devices.

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## Citation (applicant)

- US 2006172083 A1 20060803 - LEE JUNG-HYUN [KR], et al
- US 2006180811 A1 20060817 - LEE JUNG-HYUN [KR], et al
- US 2006049447 A1 20060309 - LEE JUNG-HYUN [KR], et al
- US 5312983 A 19940517 - BROWN DUNCAN W [US], et al
- US 7060243 B2 20060613 - BAWENDI MOUNGI G [US], et al
- INORG. NUCL. CHEM. LETT., vol. 3, 1967, pages 549 - 552
- JOURNAL OF ORGANIC CHEMISTRY, vol. 47, no. 7, 1982, pages 1354 - 6
- J. ORGANOMETAL. CHEM., vol. 493, 1995, pages 189 - 197
- J. ELECTROCHEMICAL SOC., vol. 154, 2007, pages H318 - H324

## Cited by

EP2532767A1; CN102030315A; EP2394748A3; KR20130026467A; US8765223B2; US8507040B2; US9240319B2; US9109281B2; US8193027B2; US8563353B2

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## DOCDB simple family (application)

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